AMENDMENTS TO THE CLAIMS

Claims 1-31 are pending in the instant application. Claims 10-19 and 29-31 have been withdrawn. Claims 2-7 and 21-27 have been amended. The Applicant requests reconsideration of the claims in view of the following amendments reflected in the listing of claims.

Listing of claims:

1. (Original) A method for receiving a signal comprising:

receiving *K* replicas of the signal, each of the *K* replicas being received by one of a corresponding *K* antennas so as to thereby generate *K* received signal replicas;

processing each of the *K* received signal replicas using one of *N* orthogonal sequences, thereby generating *K* processed signal replicas, wherein *N* is less than *K*;

orthogonally multiplexing the *K* processed received signal replicas into a multiplexed signal provided to a signal processing chain;

downconverting, within the signal processing chain, the multiplexed signal into a baseband multiplexed signal; and

transforming the baseband multiplexed signal into *K* separate signals wherein each of the *K* separate signals corresponds to one of the *K* replicas of the signal.

2. (Currently Amended) The method of claim 1 wherein the processing comprises~~includes~~:

assigning each of *N* of the *K* received signal replicas a corresponding one of the *N* orthogonal sequences so as to thereby generate a first composite signal;

scrambling the first composite signal according to a first scrambling sequence so as to thereby generate a first set of *N* channel signals;

assigning each of *M* of the *K* received signal replicas a corresponding one of *M* orthogonal sequences so as to thereby generate a second composite signal, wherein the *M* orthogonal sequences are a subset of the *N* orthogonal sequences;

scrambling the second composite signal according to a second scrambling sequence so as to thereby generate a second set of *M* channel signals; and

combining the first set of *N* channel signals and the second set of *M* channel signals so as to generate the multiplexed signal.

3. (Currently Amended) The method of claim 2 wherein the transforming comprises~~includes~~:

removing interference due to the first set of *N* channel signals from the second set of *M* channel signals, thereby generating *M* interference-reduced signals comprising a subset of the *K* separate signals.

4. (Currently Amended) The method of claim 3 wherein the transforming comprises~~includes~~:

removing interference due to the second set of *M* channel signals from the first set of *N* channel signals, thereby generating *N* interference-reduced signals comprising a subset of the *K* separate signals.

5. (Currently Amended) The method of claim 3 wherein the removing comprises~~includes~~:

despreading the first set of *N* channel signals so as to generate a set of *N* despread baseband signals;

synthesizing an interference signal as a function of the set of *N* despread baseband signals; and

subtracting the interference signal from the baseband multiplexed signal thereby removing interference due to the first set of *N* channel signals from the second set of *M* channel signals.

6. (Currently Amended) The method of claim 5 wherein the synthesizing comprises~~includes~~:

passing each of the *N* despread baseband signals through a corresponding one of *N* threshold detectors so as to generate an estimated set of *N* symbol values for the first set of *N* channel signals;

spreading each of the 8/sYrobVI values according to a corresponding one of the *N* orthogonal sequences so as to generate a first baseband composite signal; and

scrambling the first baseband composite signal according to the first scrambling sequence so as to synthesize the interference signal.

7. (Currently Amended) The method of claim 4 wherein the removing comprises~~includes~~:

despreading the first set of *N* channel signals so as to generate a set of *N* despread baseband signals;

despreading the second set of *M* channels signals so as to generate a set of *M* despread baseband signals; and

subtracting, from each of the *N* despread baseband signals, an interference signal synthesized as a function of the *M* despread baseband signals thereby removing interference due to the second set of *M* channel signals from the first set of *N* channel signals.

8. (Original) The method of claim 7 wherein the interference signal is synthesized as a function of estimated symbol values generated from the *M* despread baseband signals.

9. (Original) The method of claim 1 wherein the signal complies with a communication protocol selected from the group consisting of: orthogonal frequency division multiplexing (OFDM), time division multiple access (TDMA), code division multiple access (CDMA), gaussian minimum shift keying (GMSK), complementary code keying (CCK), quadrature phase shift keying (QPSK), frequency shift keying (FSK), phase shift keying (PSK), and quadrature amplitude modulation (Q AM).

10. – 19. (Withdrawn)

20. (Original) An apparatus for receiving a signal comprising:

an antenna array comprising *K* antenna elements, wherein the *K* antenna elements are spatially arranged to receive one of a corresponding *K* replicas of the signal, so as to be capable of generating *K* received signal replicas;

a signal processing chain;

means for processing each of the *K* received signal replicas using one of *N* orthogonal sequences, so as to thereby generate *K* processed signal replicas, wherein *N* is less than *K* means for orthogonally multiplexing the *K* processed received signal replicas into a multiplexed signal provided to the signal processing chain;

means for downconverting, within the signal processing chain, the multiplexed signal into a baseband multiplexed signal; and

means for transforming the baseband multiplexed signal into *K* separate signals wherein each of the *K* separate signals corresponds to one of the *K* replicas of the signal.

21. (Currently Amended) The apparatus of claim, 20 wherein the means for processing comprises~~includes~~:

means for assigning each of *N* of the *K* received signal replicas a corresponding one of the *N* orthogonal sequences so as to be capable of generating a first composite signal;

means for scrambling the first composite signal according to a first scrambling sequence so as to capable of generating a first set of *N* channel signals;

means for assigning each of *M* of the *K* received signal replicas a corresponding one of *M* orthogonal sequences so as to be capable of generating a second composite signal, wherein the *M* orthogonal sequences are a subset of the *N* orthogonal sequences;

means for scrambling the second composite signal according to a second scrambling sequence so as to be capable of generating a second set of *M* channel signals; and

means for combining the first set of 7Vchmona}signals and the second set of Al channel signals so as to be capable of generating the multiplexed signal.

22. (Currently Amended) The apparatus of claim 21 wherein the means for transforming comprises~~includes~~:

means for removing interference due to the first set of *N* channel signals from the second set of Al channel signals so as to thereby generate Al interference-reduced signals comprising a subset of the *K* separate signals.

23. (Currently Amended) The apparatus of claim 22 wherein the means for transforming comprises~~includes~~:

means for removing interference due to the second set of *M* channel signals from the first set of *N* channel signals so as to thereby generate *N* interference-reduced signals comprising a subset of the *K* separate signals

24. (Currently Amended) The apparatus of claim 22 wherein the means for removing comprises~~includes~~:

means for despreading the first set of *N* channel signals so as to be capable of generating a set of *N* despread baseband signals;

means for synthesizing an interference signal as a function of the set nf87 despread baseband signals; and

means for subtracting the interference signal from the baseband multiplexed signal so as 30 to be capable of removing interference due to the first set of *N* channel signals from the second set of *M* channel signals.

25. (Currently Amended) The apparatus of claim 24 wherein the means for synthesizing comprises~~includes~~:

means for generating an estimated set of *N* symbol values for the first set of *N* channel signals as a function of the *N* despread baseband signals;

means for spreading each of the *N* symbol values according to a corresponding one of the *N* orthogonal sequences so as to be capable of generating a first baseband composite signal; and

means for scrambling the first baseband composite signal according to the first scrambling sequence so as to be capable of synthesizing the interference signal.

26. (Currently Amended) The apparatus of claim 23 wherein the means for removing comprises~~includes~~:

means for despreading the first set of *N* channel signals so as to be capable of generating a set of *N* despread baseband signals;

means for despreading the second set of *M* channels signals so as to be capable of generating a set of *M* despread baseband signals;

means for synthesizing an interference signal as a function of the *M* despread baseband signals; and

means for subtracting, from each of the *N* despread baseband signals, the interference signal so as to be capable of removing interference due to the second set of *M* channel signals from the first set of *N* channel signals.

27. (Currently Amended) The apparatus of claim 26 wherein the means for synthesizing the interference signal comprises~~includes~~ means for generating estimated symbol values from the *M* despread baseband signals, and wherein the means for synthesizing the interference signal comprises~~includes~~ means for synthesizing the interference signal as a function of the estimated symbol values.

28. (Original) The apparatus of claim 20 wherein the signal complies with a communication protocol selected from the group consisting of: orthogonal frequency division multiplexing (OFDM), time division multiple access (TDMA), code division multiple access (CDMA), gaussian minimum shift keying (GMSK), complementary code keying (CCK), quadrature phase shift keying (QPSK), frequency shift keying (FSK), phase shift keying (PSK), and quadrature amplitude modulation (QAM).

29. – 31. (Withdrawn)